



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,259	07/29/2003	Craig A. Hamilton	9151-26	6693
20792	7590	12/04/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			LAURITZEN, AMANDA L	
PO BOX 37428			ART UNIT	PAPER NUMBER
RALEIGH, NC 27627			3737	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,259	HAMILTON ET AL.	
	Examiner	Art Unit	
	Amanda L. Lauritzen	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 02 August 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-27 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/2/2006</u> | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Rejection of claims 9-11 and 20 under 35 U.S.C. 112, 2nd paragraph has been withdrawn in view of the amendments to those claims.

Response to Arguments

2. Applicant's arguments filed August 2, 2006 have been fully considered but they are not persuasive. New grounds of rejection is warranted for new claims 25, 26 and 27.
3. Examiner respectfully disagrees with Applicant's arguments that because the Lobodzinski reference is directed to video signals rather than MRI cine loops it cannot anticipate claims 1-7, 8-10, 12-19, 21, 22 and 24. Lobodzinski expressly teaches what is conventional in the art, the use of cine loop review and cine loop adjustment based on heart rate (col. 2, line 4 and col. 13, line 15). Furthermore, all image processing, including frame manipulation and review, of Lobodzinski is identical to the claims as presented and is identical regardless of cine or DICOM.
4. Regarding claims 11 and 9, Applicant asserts that Lobodzinski has a frame rate built in to its video stream and that there is no need to modify this frame rate by inserting duplicate frames as taught by Brackett. Examiner respectfully disagrees. Lobodzinski discloses frame rate manipulation (col. 9, line 8; col. 11, lines 65-66; col. 12, lines 14-16), access to specific frames (col. 7, line 11), and synchronous display of cardiac cycles (col. 7, line 26). Lobodzinski does not disclose adding duplicate frames to achieve these ends, but Brackett establishes that this technique is known in the art. Examiner maintains that it would have been obvious to add duplicate frames as taught by Brackett "in order to achieve a given display frame rate" (for motivation see Brackett paragraph 29, line 12).

Art Unit: 3737

5. Regarding claims 12, 17 and new claim 26, Applicant submits that Lobodzinski fails to teach frames that are added and/or removed are evenly distributed. Examiner calls attention to col. 13, lines 1-36 in which a fast cycle is synchronized with a slow cycle by alignment of the QRS complex and displaying “only every other field of the slow cycle” thereafter for simultaneous display with the fast cycle (col. 13, lines 31-33).

Removing every other frame constitutes evenly distributed adjustment of frame loop.

6. Regarding claims 21, 22 and 24, Applicant submits that Lobodzinski does not teach adjustment of a viewing parameter or characteristic on one frame to be automatically transmitted to other frames. Examiner respectfully disagrees and calls attention to col. 12, lines 18-42 in which format of a single frame is adjusted and automatically applied to all of the frames in the selected one or more loops (also col. 12, lines 60-65 and Fig. 6).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Art Unit: 3737

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1, 3-4 and 6-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/628,915. Although the conflicting claims are not identical, they are not patentably distinct from each other because the current claims are broader in scope and are therefore anticipated by the conflicting claims. The current claims are broader in that they are not specific to wall motion cine loops and perfusion cine loops. This is a provisional type double patenting rejection because the conflicting claims are part of a pending application and have not yet been patented.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-7, 8-10, 12-19, 21, 22, 24, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Lobodzinski (US 5619995). Lobodzinski discloses a system for used with diagnostic imaging systems for the acquisition, display, and processing for enhanced visualization of data. Although much of the disclosure is directed to an ultrasound system, other systems may be used such as a “cardiac Magnetic Resonance Imaging apparatus” (col. 8, line 10). Lobodzinski states that although most diagnostic imaging systems provide some sort of cine loop review (col. 2, line 4), they typically do not provide without the additional processing and display that Lobodzinski

discloses. The cine-loops are adjusted based on heart rate where the number of frames obtained is based on the heart period (col. 13, line 15). Two or more such loops may be synchronized and simultaneously displayed. Frames may be removed from the slower heart rate loop so that the cycles will be displayed simultaneously (col. 13, lines 24-35) so that the temporal placement of the frames in each cycle are the same and therefore each cycle has the same number of frames (figure 7). Lobodzinski states that cycle synchronization is important in stress testing, as patient management decisions are made from visual assessment of the motion displayed simultaneously (col. 13, lines 1-5). Simultaneous side-by-side comparisons may be used during examination for diagnostic purposes (col. 1, lines 61-65). Stress studies are done consisting of two or more sets of, for example pre- and post-exercise, cardiac imaging data (col. 5, line 10). The pre-exercise data establishes a baseline dataset. Comparison may also be made between different locations, or projections, of the heart during the same study (col. 13, lines 8-10). Additionally, characteristics of the loops may be adjusted, including editing functions (col. 12, line 17). The size of the display area and the frame rate may be adjusted for one or more loops (col. 12, lines 60-65). When more than one loop is selected for display, the display area is automatically adjusted and the size of all of the frames in the selected loop, as well as those in the other loop are adjusted as well (col. 12, lines 38-42 and figure 6).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 3737

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brackett (US 2003/0206646). Lobodzinski, as discussed above, discloses selection of which frames to include in the cine loop, for example by removing frames, however fails to explicitly disclose that frames may be added by repeating frames from a cine loop. Brackett also discloses a system for diagnostic imaging including the use of cine loops for storing and displaying imaging data. Additionally, Brackett discloses that duplicate frames may be inserted between existing frames in order to achieve a given display frame rate (paragraph 29). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Lobodzinski in light of the teachings of the reference by Brackett to add the capability to repeat frames in order to, as Brackett states, achieve smoother transitions, or to provide another way to achieve desired frame rate.

12. Claims 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holloway, et al (US 6500123). Lobodzinski, as discussed above, discloses synchronizing frame loops, such as a baseline loop and a stress test loop, however fails to disclose registering the two loops. Holloway also discloses a system for comparing images during stress test heart studies and further discloses that images may be aligned through transformation of one data set to the coordinate system of the other, also known as registration, in order to allow differences and similarities between the views to be readily observed. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Lobodzinski in light of the teachings of the

reference by Holloway to include registration in order to provide, as Holloway states, improved alignment and to reduce variability in diagnoses (col 1, lines 45-65).

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Song, et al (US 5680862). Lobodzinski, as discussed above, substantially discloses the invention as claimed including adjusting the display size of the loops. However, Lobodzinski fails to explicitly disclose cropping frames to provide a portion of the frame. Song also discloses an imaging system using MRI cine display where the images displayed in the cine loop are cropped to a region surrounding the left ventricle (col 8, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Lobodzinski in light of the teachings of the reference by Song in order to including a cropping function to provide improved visualization of details of the heart, such as the left ventricle.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saranathan et al. (U.S. 2002/0077538). Lobodzinski, as discussed above, substantially discloses the invention as claimed but does not expressly include details of using a fast-gradient echo segmented k-space sequence or temporal resolution. However, Saranathan discloses an imaging system using MRI cine display where the image acquisition is disclosed as fast-gradient echo segmented k-space sequence and with a temporal resolution between about 13 and 65 ms, sufficient for identification of the end of systole (paragraphs 39 and 43 in which various temporal resolutions are disclosed: 33, 16.5 ms, etc. for varying heart rates). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the disclosure of Lobodzinski in light of the teachings of Saranathan to detail using fast-gradient k-space echo sequencing in the acquisition of

Art Unit: 3737

MR images in order to significantly reduce imaging scan times and provide sufficient spatial and temporal resolution to detect cardiac wall motion abnormalities related to ischemic events in near real-time (Saranathan, line 35 of paragraph 39; also paragraph 8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda L. Lauritzen whose telephone number is (571) 272-4303. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

Art Unit: 3737

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


A.L.L.
11/22/2006


BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700